April 24, 2002

MEMORANDUM TO: Melvyn N. Leach, Chief
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards

THRU: Joseph G. Giitter, Chief
Enrichment Section
Special Projects Branch, FCSS

FROM: Timothy C. Johnson
Senior Mechanical Systems Engineer **/RA/**
Enrichment Section
Special Projects Branch, FCSS

SUBJECT: APRIL 11, 2002, MEETING SUMMARY: U.S. ENRICHMENT CORPORATION GAS CENTRIFUGE LEAD CASCADE PRE-APPLICATION MEETING ON QUALITY ASSURANCE AND SECURITY

On April 11, 2002, U.S. Nuclear Regulatory Commission (NRC) staff held a pre-application meeting with U.S. Enrichment Corporation (USEC) staff to discuss gas centrifuge lead cascade quality assurance and security programs. I am attaching the meeting summary for your use. This summary contains no proprietary or classified information.

Docket: 70-7003

Attachment: USEC Gas Centrifuge Lead Cascade Quality
Assurance and Security Meeting Summary

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NAME	TCJohnson:dw		DHoadley		JGiitter	
DATE	4 / 24 /02		4 / 24 /02		4 / 24 /02	

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U.S. Enrichment Corporation Lead Cascade Quality Assurance and Security Meeting Summary

Date: April 11, 2002

Place: U.S. Nuclear Regulatory Commission (NRC) Offices; Rockville, MD

Attendees: See Attachment 1

Purpose:

The purpose of this meeting was to discuss with the U.S. Enrichment Corporation (USEC) staff their plans for addressing quality assurance and security issues applicable to USEC's gas centrifuge lead cascade project.

Discussion:

Following introduction of individuals attending the meeting, USEC staff provided a general discussion of the lead cascade project. They indicated that they would be submitting a license application under 10 CFR Part 70 for operation of up to 240 gas centrifuge machines for testing only at one of the gaseous diffusion plants. Enriched material and tails would be recombined so that no enriched product would be produced other than for sampling purposes. The lead cascade would be used to provide design, operations, and reliability information to support a decision on development of a full-scale commercial gas centrifuge facility. The lead cascade would have a possession limit of 250 kg of uranium hexaflouride and USEC would try to use programs already used at the gaseous diffusion plants if applicable. USEC indicated that although a Cooperative Research and Development Agreement has not yet been completed with the U.S. Department of Energy (DOE) for use of DOE gas centrifuge technology, USEC was still working to submit the lead cascade license application by the end of 2002. USEC staff also indicated that if USEC decides to submit a license application for a full-scale commercial plant, the license application would be submitted after issuance of the lead cascade license and after a period of lead cascade operations.

USEC staff indicated that it plans to prepare a quality assurance program description for the gas centrifuge lead cascade project and submit it for NRC review as a separate document prior to the license application. USEC staff stated that they had previously submitted a similar document to NRC for the Atomic Vapor Laser Isotope Separation (AVLIS) project. USEC staff discussed differences between the lead cascade requirements and those for the gaseous diffusion plants. USEC staff stated that for the gaseous diffusion plants, 10 CFR Part 76 requires a quality assurance program satisfying American Society of Mechanical Engineers (ASME) NQA-1, 1989 requirements. USEC staff also stated that changes to the gaseous diffusion plants are made in accordance with 10 CFR 76.68. For the lead cascade under 10 CFR Part 70, management measures are required that include configuration management, maintenance, training and qualifications, procedures, audits and assessments, incident investigations, records management, and other quality assurance elements. Under 10 CFR Part 70, an NQA-1 quality assurance program may be used, but is not prescribed.

For the lead cascade, USEC staff indicated that it would submit a stand-alone quality assurance program description by July 19, 2002. The program description would have a graded, risk-informed approach tied to the performance requirements in 10 CFR 70.61 and the Items Relied on For Safety (IROFS). Changes and updates would be controlled through the change process required in 10 CFR 70.72. USEC staff indicated that the gaseous diffusion plant quality assurance program could not be used for the lead cascade because of the different regulatory basis, change process, and management structure. The quality assurance program description would address essentially all the 18 criteria of 10 CFR Part 50, Appendix B and NQA-1. A three-level grading structure would be used for IROFS required to prevent or mitigate high consequence and criticality events, IROFS required for intermediate consequence events, and for other systems. A corrective action program would be applied as part of the management measures for audits and assessments and for incident investigations. The corrective action program would be based on the existing program at the gaseous diffusion plants.

USEC staff indicated that it would submit a security plan for the lead cascade project to the NRC by June 14, 2002. The plan would discuss physical security, classified matter security, and safeguards. The security plan would be similar to the plan in place for the gaseous diffusion plants, but would reflect the limited scope of the small-scale lead cascade operations.

NRC staff indicated that general concepts of these programs appeared to acceptable and it would attempt to support timely reviews of the program documents.

USEC's handouts are enclosed in Attachment 2.

USEC also proposed a pre-application meeting in the area of Integrated Safety Assessment (ISA). USEC and NRC staff agreed to further discuss possible dates for this meeting.

Action Items:

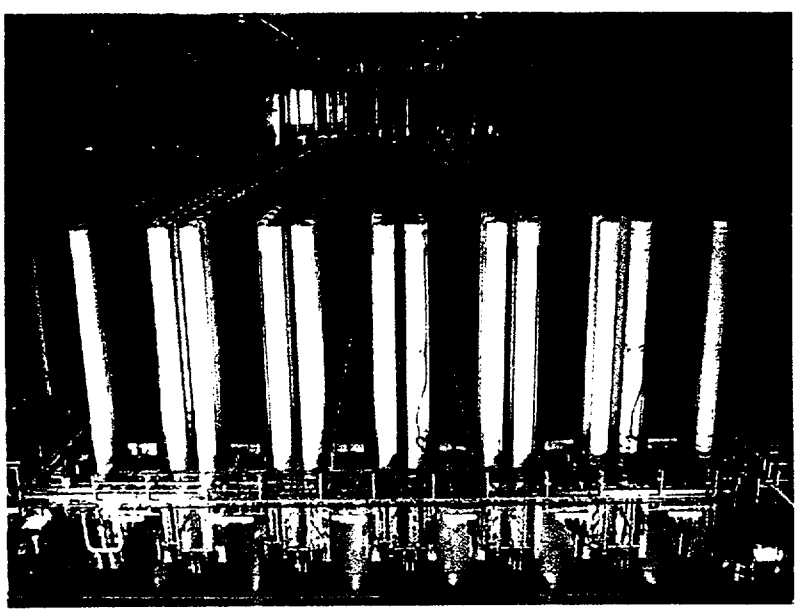
Set up ISA pre-application meeting.

Attachments: 1. Attendee list
2. Meeting handouts

USEC Gas Centrifuge Pre-Application QA and Security Meeting
Date: April 11, 2002

NAME	AFFILIATION	PHONE
TIM JOHNSON	NRC / NMSS	301-415-7299
Peter J. Miner	USEC	(740) 897-2710
MARIO ROBLES, JR	USEC	(301) 564-3408
ROBERT LAWTON	USEC	(740) 897-2255
TRENT WERTZ	USEC	301-564-3324
Mark Lombard	USEC	301-564-3248
JIM LIEBERMAN	NRC/OGC	301 415 2716
WILKINS SMITH	NRC/NMSS	301-415-5788
Bill Tomson	Exchange Monitor	(202) 296-2814 x 18
Daniel Horner	McGraw-Hill	202 383-2164
J. Keith Everly	NRC / Security	301-415-7048
JOSEPH GLITTER	NRC / FCSS / SPIB	
SKIP YOUNG	NRC / NMSS / SFPO	301-415-3207
Rob Temps	NRC / NMSS / SFPO	301-415-2552
Ed JOHANNEMANN	NRC/NSIR	301-415-8147
Andy Rayland	NRC/NSIR	301-415-8102

Attachment 1



USEC/NRC
2nd Pre-Application Meeting for the Centrifuge Lead Cascade Facility

NRC Headquarters

Rockville, Maryland

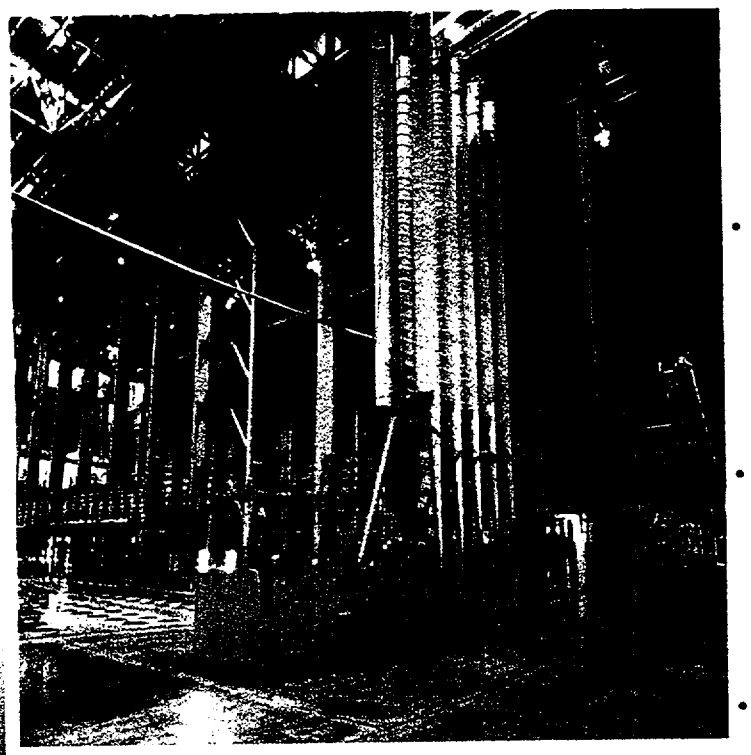
April 11, 2002

Attachment 2

AGENDA

- Introduction & Purpose
- Overview of GDP QA (Part 76)
- Role of QA in Part 70 and Management Measures
- Corrective Action Program
- Physical, Information and Transportation Security
- Conclusions, Feedback, Action Plan

INTRODUCTION TO LEAD CASCADE PROJECT



- **Design, construct and operate a centrifuge test facility with up to 240 machines at a GDP**
  - Modest possession limit of 250 kg UF_6 with the enrichment limit the same as the GDP
  - Attempt to use GDP programs, as appropriate, to facilitate facility licensing
- **Machines will be installed in an enrichment configuration but no enriched product will be withdrawn except for laboratory samples**
  - Product and Tails are recombined and re-fed
- **Machine design builds upon more than $3 billion investment by DOE in centrifuge technology and is being demonstrated in Oak Ridge**
- **Operation will provide data on design, operation and reliability for Commercial Plant to minimize or eliminate risk factors**
  - Technical, Regulatory, Financial

PURPOSE OF MEETING

- **Provide USEC's plan to develop and submit a QA Program Description and a combined Security Plan in support of the Part 70 License Application for the Lead Cascade (Docket No. 70-7003)**

- **Obtain NRC feedback on the proposed development and submittal of the QAPD and Security Plan for the Lead Cascade**

- **Precedence for submittal and NRC review of select regulatory documents in advance of a License Application**
  - On June 18, 1998, following staff review of USEC's QAPD for Atomic Laser Isotope Separation (AVLIS), NRC letter stated:

    "...we conclude that the QAPD describes a QA program that is acceptable for design, siting, construction, operation, maintenance, modification, and decommissioning of an AVLIS enrichment facility."
  - On December 2, 1999, following staff review of USEC's Security Plan for the Protection of Classified Matter at the Advanced Technology Engineering Facility in Paducah, NRC letter stated:

    "...I hereby grant the ATEF facility an interim facility (security) clearance at the SECRET-Restriicted Data level."we conclude that the Lone Oak Security Plan describes a security program that is acceptable for"

OVERVIEW OF GDP QA (Part 76)

- **10 CFR 76.35(d), "Contents of Application"**

  "A quality assurance program that meets the requirements of § 76.93"

- **10 CFR 76.93, "Quality Assurance"**

  "The Corporation shall establish, maintain, and execute a quality assurance program satisfying each of the applicable requirements of ASME NQA-1-1989, ``Quality Assurance Program Requirements for Nuclear Facilities,'' or satisfying acceptable alternatives to the applicable requirements. The Corporation shall execute the criteria in a graded approach to an extent that is commensurate with the importance to safety."

- **Features of the GDP QAP**
  - Stand alone QAP
  - NQA-1, 1989 Edition specified
  - Specific to GDP organization
  - Prescriptive (Program versus Program Description)
  - SSCs classified as Important to Safety (Q, AQ-NCS, AQ, non-safety)
  - Changes and updates controlled by 10 CFR 76.68, "Plant Changes"

Changes to GDP QAP

10 CFR 76.68

(a) The Corporation may make changes to the plant or to the plant's operations as described in the safety analysis report without prior Commission approval provided all the provisions of this section are met:

(1) The Corporation shall conduct a written safety analysis which demonstrates that the changes would not result in undue risk to public health and safety, the common defense and security, or to the environment.

(2) The changes must be authorized by responsible management and approved by a safety review committee.

(3) The changes may not decrease effectiveness of the plant's safety, safeguards, and security programs.

(4) The changes may not involve a change in any condition to the certificate of compliance.

(5) The changes may not involve a change to any condition to the approved compliance plan.

(6) The changes may not involve an unreviewed safety question."

Updates to GDP QAP

10 CFR 76.68(b)

To ensure that the approved application remains current with respect to the actual site description and that the plant's programs, plans, policies, and operations are in place, the Corporation shall submit revised pages to the approved application and safety analysis report, marked and dated to indicate each change.

The Corporation shall evaluate any as-found conditions that do not agree with the plant's programs, plans, policies, and operations in accordance with paragraph (a) of this section.

These revisions must be submitted before April 15 of each calendar year, or at a shorter interval as may be specified in the certificate.

If a renewal application for a certificate is filed in accordance with Sec. 76.36 of this part, the revisions shall be incorporated into the application."

QA in 10 CFR 70

- **10 CFR 70.64(a)(1), "Requirements for new facilities or new processes at existing facilities"**

  "(a) Baseline design criteria. Each prospective applicant or licensee shall address the following baseline design criteria in the design of new facilities…

  … (1) Quality standards and records. The design must be developed and implemented in accordance with management measures, to provide adequate assurance that items relied on for safety will be available and reliable to perform their function when needed. Appropriate records of these items must be maintained by or under the control of the licensee throughout the life of the facility.

- **10 CFR 70.4, "Definitions"**

  "*Management measures* mean the functions performed by the licensee, generally on a continuing basis, that are applied to items relied on for safety, to ensure the items are available and reliable to perform their functions when needed. **Management measures include** configuration management, maintenance, training and qualifications, procedures, audits and assessments, incident investigations, records management, and **other quality assurance elements**"

Features of Lead Cascade QA

- Stand Alone QAPD
- No Mandatory Standard
- Different Management Structure than GDP
- More descriptive then prescriptive (similar to AVLIS QAPD)
- Graded, Risk-informed Approach Based on 10 CFR 70.61, "Performance Requirements"
- Emphasis on Items Relied On For Safety (IROFS)
- QA tied to Management Measures in the License Application
- Changes and Updates controlled by 10 CFR 70.72, "Facility Changes and Change Process"

Changes to Lead Cascade (including QAPD)

10 CFR 70.72 (c)

The licensee may make changes to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel, without prior Commission approval, if the change:

(1) Does not:

(i) Create new types of accident sequences that, unless mitigated or prevented, would exceed the performance requirements of Sec. 70.61 and that have not previously been described in the integrated safety analysis summary; or

(ii) Use new processes, technologies, or control systems for which the licensee has no prior experience;

(2) Does not remove, without at least an equivalent replacement of the safety function, an item relied on for safety that is listed in the integrated safety analysis summary;

(3) Does not alter any item relied on for safety, listed in the integrated safety analysis summary, that is the sole item preventing or mitigating an accident sequence that exceeds the performance requirements of Sec. 70.61; and

(4) Is not otherwise prohibited by this section, license condition, or order.

Updates to Lead Cascade (including QAPD)

10 CFR 70.72

(2) For changes that do not require pre-approval **under Sec. 70.72, the licensee shall submit to NRC annually,** within 30 days after the end of the calendar year during which the changes occurred, a brief summary of all changes to the records required by Sec. 70.62(a)(2) of this subpart.

(3) For all changes that affect the integrated safety analysis summary, **the licensee shall submit to NRC annually, within 30 days after the end of the calendar year during which the changes occurred,** revised integrated safety analysis summary pages."

HEIRACHY OF DOCUMENTS

REGULATIONS

10 CFR Part 70

LICENSE APPLICATION

Section 3, ISA and ISA Summary

Section 11, Management Measures

ISA SUMMARY

Commitments

QAPD

Commitments

PROCEDURES

Management Controls

Operating

Maintenance

Emergency

LEAD CASCADE QA

- **GDP QAP could <u>not</u> be used for the Lead Cascade**
  - Different management structure
  - Different regulatory basis
  - Different change process and update requirements

- **Licensing work related to IROFS is currently ongoing**
  - Environmental Report
  - Integrated Safety Analysis
  - Vendor QA programs currently being used

- **USEC plans to submit to the NRC for review a "stand alone" QAPD for activities related to the Lead Cascade by July 19, 2002**

LEAD CASCADE QAPD SUBMITTAL

- **Describe policy and provide QA commitments**

- **Address 19 "other QA elements" in Section 11.4.3.8 of NUREG-1520 (essentially the 18 criteria of Part 50 App.B or NQA-1 plus provision for updating QA documents)**

- **Establish a graded, risk-informed approach**
  - QAL-1 for IROFS that prevent/mitigate High Consequence Events/Criticality
  - QAL-2 for IROFS that prevent/mitigate Intermediate Consequence Events
  - QAL-3 for other than QAL-1 and QAL-2

- **Section 11, "Management Measures," of the License Application will make extensive use of the QAPD as a reference document**

QAPD and LICENSE APPLICATION

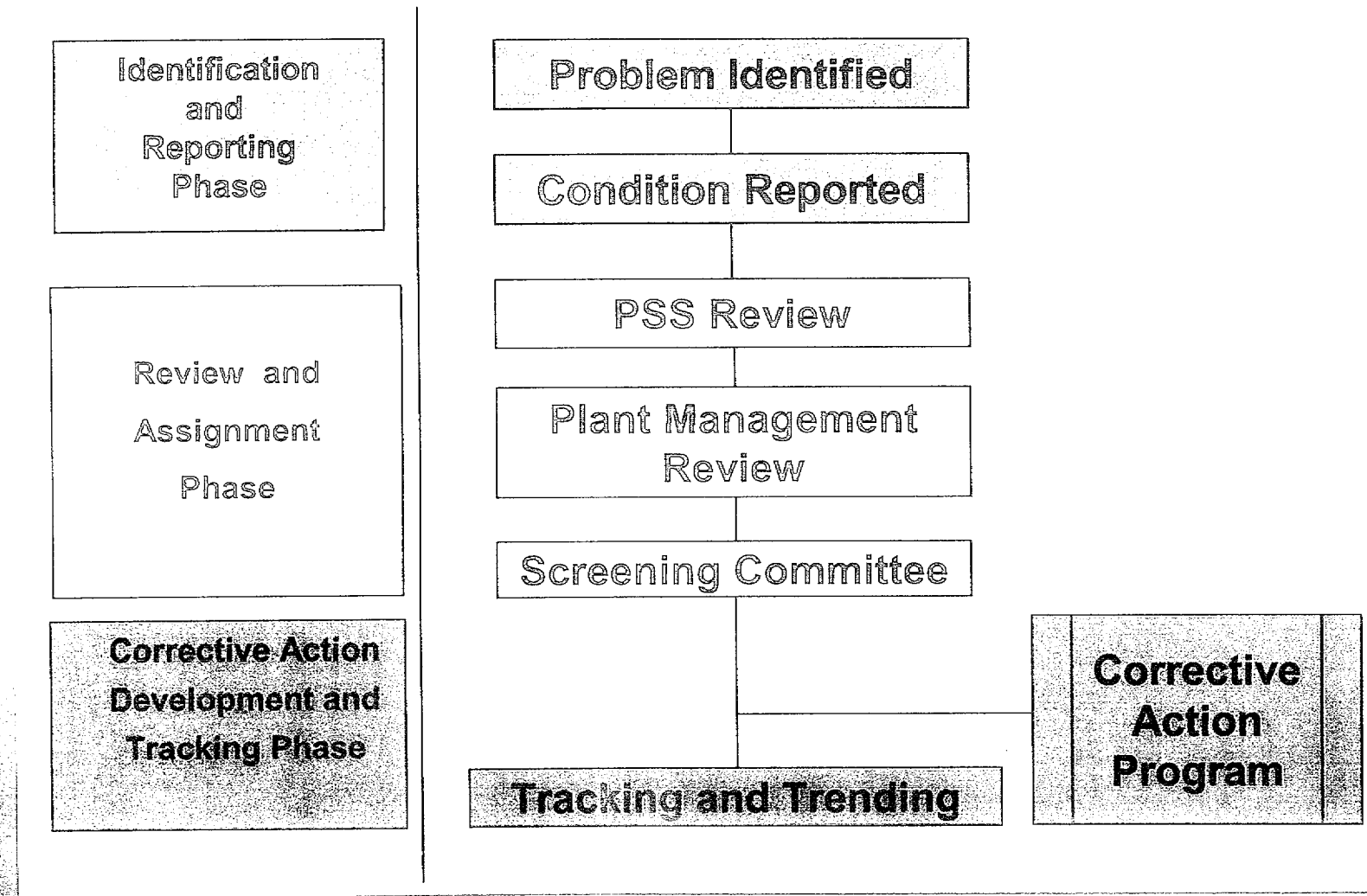
	QAPD	LICENSE APPLICATION
No.	**"OTHER QA ELEMENTS"**	**MANAGEMENT MEASURES**
1	ORGANIZATION	CONFIGURATION MANAGEMENT
2	QUALITY ASSURANCE PROGRAM	TRAINING & QUALIFICATION
3	DESIGN CONTROL	CONFIGURATION MANAGEMENT
4	PROCUREMENT DOCUMENT CONTROL	CONFIGURATION MANAGEMENT
5	INSTRUCTIONS, PROCEDURES, AND DRAWINGS	CONFIGURATION MANAGEMENT
6	DOCUMENT CONTROL	CONFIGURATION MANAGEMENT
7	CONTROL OF PURCHASED ITEMS AND SERVICES	CONFIGURATION MANAGEMENT
8	IDENTIFICATION AND CONTROL OF ITEMS	CONFIGURATION MANAGEMENT
9	CONTROL OF PROCESSES	MAINTENANCE
10	INSPECTION	CONFIGURATION MANAGEMENT
11	TEST CONTROL	MAINTENANCE
12	CONTROL OF MEASURING AND TEST EQUIPMENT	MAINTENANCE
13	HANDLING, STORAGE, AND SHIPPING	MAINTENANCE
14	INSPECTION TEST AND OPERATING STATUS	MAINTENANCE
15	CONTROL OF NONCONFORMING ITEMS	INCIDENT INVESTIGATIONS
16	CORRECTIVE ACTION	INCIDENT INVESTIGATIONS
17	QUALITY ASSURANCE RECORDS	RECORDS MANAGEMENT
18	AUDITS	AUDITS & ASSESSMENTS

CORRECTIVE ACTION PROGRAM

- Part of the Management Measures for "Audits and Assessment" and "Incident Investigation" can be addressed through an effective Correction Action Program (CAP)

- USEC believes that in this case the existing CAP at the GDPs are mature, robust and flexible enough to also be used by the Lead Cascade project with some personnel training and minor adjustments to processes

PROBLEM IDENTIFICATION, REPORTING & CORRECTIVE ACTION



PHYSICAL, INFORMATION AND TRANSPORTATION SECURITY

- 10 CFR 70.22(k), (m) and 73.67(a) require a Physical Security Plan for the protection of SNM
- 10 CFR 70.22(m) and 95.5 require a Classified Matter Protection Plan and Facility Clearance for the protection of classified matter
- 10 CFR 70.32(g) requires a Safeguards Contingency Plan to provide personnel guidance to accomplish specific objectives in the event of threats, thefts, or radiological sabotage relating to SNM
- The combined Lead Cascade Security Plan (i.e., physical security, classified matter control, and safeguards contingency plan) will be similar to the format and content of the recently-approved GDP Plant Security Plan, but will be more limited in scope based on the laboratory-scale operations of the Lead Cascade
- USEC plans to submit to the Lead Cascade Security Plan to NRC for review by June 14, 2002

Conclusion, Feedback, Action Plan

- USEC will develop and submit by July 19, 2002 a QA Program Description for the Lead Cascade for NRC review

- USEC will develop and submit by June 14, 2002 a combined Security Plan for the Lead Cascade for NRC review

- USEC requests that the NRC take action to support the review of the above regulatory documents to support the License Application of the Lead Cascade scheduled to be submitted by the end of 2002

- USEC requests that the next Lead Cascade pre-application meeting to discuss ISA methodology be scheduled later this month